```
=> set pag scr;act t1/a;d 70 13 2 .finalreport
SET COMMAND COMPLETED
L1              QUE  PLU=ON  AUDIO OR VOICE OR VOCAL
L2              QUE  PLU=ON  PAG##### OR MESSAG#### OR NOTIF########
L3              QUE  PLU=ON  COMMAND##### OR INSTRUCT#####
L4              QUE  PLU=ON  CONTROL####
L5              QUE  PLU=ON  COMMUNICAT##### OR LINK
L6              QUE  PLU=ON  NETWORK OR LAN
L7  (      5205)SEA FILE=USPAT PLU=ON  L1 (5A) L2
L8  (     12961)SEA FILE=USPAT PLU=ON  L2 (5A) (L5 OR L6)
L9  (     79215)SEA FILE=USPAT PLU=ON  (L3 OR L4) (5A) (L5 OR L6)
L10 (      3975)SEA FILE=USPAT PLU=ON  L8 (P) L9
L11 (       240)SEA FILE=USPAT PLU=ON  L7 (P) L10
L12             QUE  PLU=ON  REMOTE OR CENTRAL OR LOCAL
L13 (      9103)SEA FILE=USPAT PLU=ON  L9 (10A) L12
L14          73 SEA FILE=USPAT PLU=ON  L11 (L) L13
US PAT NO:      4,178,475 [IMAGE AVAILABLE]            L14: 70 of 73
DATE ISSUED:    Dec. 11, 1979
TITLE:          Method and control apparatus for radio paging systems
INVENTOR:       Frank D. Taylor, Omaha, NE
                Ronald J. Novotny, Omaha, NE
APPL-NO:        05/884,820
DATE FILED:     Mar. 9, 1978
US-CL-CURRENT: 379/57
US PAT NO:      5,557,605 [IMAGE AVAILABLE]            L14: 13 of 73
DATE ISSUED:    Sep. 17, 1996
TITLE:          Method for providing caller data in a time division
                  multiplexed wireless communication system
INVENTOR:       Gary W. Grube, Barrington, IL
                Brian K. Bunkenburg, Chicago, IL
                Marc C. Naddell, Schaumburg, IL
APPL-NO:        08/333,919
DATE FILED:     Nov. 3, 1994
US-CL-CURRENT: 370/345; 379/63, 207, 265
US PAT NO:      5,621,727 [IMAGE AVAILABLE]            L14: 2 of 73
DATE ISSUED:    Apr. 15, 1997
TITLE:          System and method for private addressing plans using
                  community addressing
INVENTOR:       Gregory M. Vaudreuil, Dallas, TX
APPL-NO:        08/499,198
DATE FILED:     Jul. 7, 1995
REL-US-DATA:    Continuation-in-part of Ser. No. 307,517, Sep. 16, 1994.
US-CL-CURRENT: 379/225, 231, 234
```

US PAT NO: 4,178,475 [IMAGE AVAILABLE] L26: 70 of 73
DATE ISSUED: Dec. 11, 1979
TITLE: Method and control apparatus for radio paging systems
US-CL-CURRENT: 379/57

ABSTRACT:
A control apparatus for an automatic radio paging system comprising a paging tone encoder circuit for generating a plurality of paging signals, a radio transmitter for transmitting the paging signals and a plurality of mobile pagers which are each tuned to a different paging signal. In particular, the **control** apparatus of the present invention **communicatively** coupled a Touch-Tone telephone subset with a radio paging system such that the person making the page is capable of initiating and controlling the paging operation from a remote telephone subset. The control apparatus provides the calling party with access to the radio paging system only after the calling party submits a properly coded access signal to the control apparatus. Thereafter, the calling party is free to initiate a page by sending paging information to the control apparatus from a Touch-Tone telephone subset. In response to this paging information, the control apparatus generates and transmits a paging signal corresponding to the mobile pager of the party being paged. Following transmission of the paging signal, the control apparatus couples the calling subset with the radio transmitter so that the calling party can transmit a **voice** **communication** to the **paged** party. The **control** apparatus is designed for use with a **local** or **remote** transmitter.

ABSTRACT:
A . . . paging signals and a plurality of mobile pagers which are each tuned to a different paging signal. In particular, the **control** apparatus of the present invention **communicatively** coupled a Touch-Tone telephone subset with a radio paging system such that the person making the page is capable of. . . signal, the control apparatus couples the calling subset with the radio transmitter so that the calling party can transmit a **voice** **communication** to the **paged** party. The **control** apparatus is designed for use with a **local** or **remote** transmitter.

US PAT NO: 5,557,605 [IMAGE AVAILABLE] L26: 13 of 73
DATE ISSUED: Sep. 17, 1996
TITLE: Method for providing caller data in a time division multiplexed wireless communication system
US-CL-CURRENT: 370/345; 379/63, 207, 265

ABSTRACT:
A source **communication** unit (101) transmits a **voice** **message** to a target **communication** unit (103) via a first wireless communication resource. In a first embodiment, the target communication unit transmits a caller data request regarding the source **communication** unit to a **central** **controller** (106) via a second wireless **communication** resource. The **central** **controller** determines and interleaves the caller data, via a third wireless **communication** resource, with the **voice** **message** or with a subsequent **voice** **message**. In a second embodiment, the caller data request is sent directly to the source communication unit. The source communication unit includes the caller data with a subsequent **voice** **message** transmission to the target **communication** unit.

ABSTRACT:
A source **communication** unit (101) transmits a **voice** **message** to a target **communication** unit (103) via a first wireless communication resource. In a first embodiment, the target communication unit transmits a caller data request regarding the source **communication** unit to a **central** **controller** (106) via a second wireless **communication** resource. The **central** **controller** determines and interleaves the caller data, via a third wireless **communication** resource, with the **voice** **message** or with a subsequent **voice** **message**. In a second embodiment, the caller data request is sent directly to the source communication unit. The source communication unit includes the caller data with a subsequent **voice** **message** transmission to the target **communication** unit.

DETDESC:

DETD(2)

Generally, . . . present invention provides a method for the selective provision of caller data within a TDM wireless communication system. A source **communication** unit transmits a **voice** **message** to a target **communication** unit over a first wireless communication resource. In a first embodiment of the present invention, the target communication unit transmits, during transmission of the **voice** **message**, a caller data request regarding the source **communication** unit to a **central** **controller** via a second wireless **communication** resource. Responsive to the caller data request, the **central** controller determines the caller data and interleaves it, via a third wireless **communication** resource, with the **voice** **message** or with a subsequent **voice** **message**.

DETDESC:

DETD(5)

The . . . stations (105), which can be iDEN.TM. base stations by Motorola, Inc., transceive RF carriers (107-108) that are allocated among

the **communication** units (101,103) by a **central** **controller** (106). The **central** controller (106), which can be a iDEN.TM. Dispatch Application Controller (DAP) by Motorola, Inc., provides the allocation control of wireless. . .

DETDESC:

DETD(6)

In . . . wireless communication resources (1.sub.1 -1.sub.6) are used for communications from the communication units (101,103) to the base stations (105) and **central** **controller** (106). The outbound wireless **communication** resources (O.sub.1 -O.sub.6) are used for communications from the base stations (105) and **central** **controller** (106) to the **communication** units (101,103). The wireless communication resources (109-110) are generally used to communicate control information, such as call requests and call. . .

DETDESC:

DETD(12)

At . . . or warranty information for the source communication unit (101). Using this method, caller data is selectively provided to the target **communication** unit (103) by the **central** **controller** (106).

DETDESC:

DETD(13)

FIG. . . . could be provided. As shown, a user of the target communication unit transmits a caller data request (R) to a **central** **controller** using a second wireless **communications** resource (302). For the purposes of this example, it is assumed that the voice message (M1) is terminated before the. . .

DETDESC:

DETD(14)

Thus, during a subsequent **voice** **message** (M2) from the source **communication** unit to the target communication unit, again using the first wireless **communications** resource (301), the **central** **controller** interleaves the caller data (D) using a third wireless communications resource (304). This is achieved by the central controller detecting. . .

DETDESC:

DETD(18)

Once . . . caller data has been determined, the source communication unit (101) interleaves the caller data, at step 405, with a subsequent **voice** **message** to the target **communication** unit (103). As in the first embodiment, the identification of the target communication unit (103) is included so that the. . . and ignored by other communication units within the system (100). In order to interleave the caller data

with the subsequent **voice** **message**, the present invention anticipates that the first communication unit (101) can request a sufficient number of wireless **communication** resources (110) from the **central** **controller** (106).

DETDESC:

DETD(22)

The . . . receiving communication unit to transmit a request for particular types of caller data. Based on such a request, either a **central** **controller** or the transmitting **communication** unit can determine and convey the requested caller data during ongoing or subsequent voice messages.

CLAIMS:

CLMS(1)

We claim:

1. In a TDM wireless communication system that includes a plurality of communication units, a plurality of wireless **communication** resources, and a **central** **controller** that allocates the plurality of wireless communication resources among the plurality of communication units, a method for providing caller data, the method comprising the steps of:
at the central controller:
a) during transmission of a **voice** **message** from a source **communication** unit of the plurality of communication units to a target communication unit of the plurality of communication units, receiving, via. . . and
c) interleaving, via a further wireless communication resource of the plurality of wireless communication resources, the caller data with the **voice** **message**.

CLAIMS:

CLMS(7)

7. In a TDM wireless communication system that includes a plurality of communication units, a plurality of wireless **communication** resources, and a **central** **controller** that allocates the plurality of wireless communication resources among the plurality of communication units, a method for providing caller data,. . . comprising the steps of:
at a source communication unit of the plurality of communication units:
a) during transmission of a **voice** **message** from the source **communication** unit to a target communication unit of the plurality of communication units, receiving, via a wireless communication resource of the. . . and
c) interleaving, via a further wireless communication resource of the plurality of wireless communication resources, the caller data with subsequent **voice** **message** from the source **communication** unit to the target communication unit.

CLAIMS:

CLMS(12)

12. In a TDM wireless communication system that includes a plurality of communication units, a plurality of wireless **communication** resources, and a **central** **controller** that allocates the plurality of wireless communication resources among the plurality of communication units, a method for displaying caller data,. . .

communication resources, a caller data request regarding a source communication unit of the plurality of communication units, wherein the source **communication** unit is transmitting a **voice** **message** to the target **communication** unit;

b) receiving, via another wireless communication resource of the plurality of wireless communication resources, the caller data responsive to the. . .

CLAIMS:

CLMS(18)

18. In a TDM wireless communication system that includes a plurality of communication units, a plurality of wireless **communication** resources, and a **central** **controller** that allocates the plurality of wireless communication resources among the plurality of communication units, a method for providing caller data, the method comprising the steps of:

a) communicating, by a source communication unit of the plurality of **communication** units, a **voice** **message** to a target **communication** unit of the plurality of communication units via a first wireless communication resource of the plurality of wireless communication resources;

b) during transmission of the **voice** **message**, transmitting, by the target **communication** unit to the **central** **controller** via a second wireless **communication** resource of the plurality of wireless communication resources, a caller data request regarding the source communication unit;

c) determining, by the. . . central controller, the caller data of the source communication unit responsive to the caller data request; and

d) interleaving, by the **central** **controller** via a third wireless **communication** resource of the plurality of wireless communication resources, the caller data with the **voice** **message**.

US PAT NO: 5,621,727 [IMAGE AVAILABLE] L26: 2 of 73
DATE ISSUED: Apr. 15, 1997
TITLE: System and method for private addressing plans using community addressing
US-CL-CURRENT: 379/225, 231, 234

ABSTRACT:
A network hub system (200) is connected to a communications cloud (18) as well as messaging systems (202), (204), (206) and (208). A public access port (212) interacts with a public virtual messaging system (202a). A private access port (214) interacts with a private virtual messaging system (202b). Address translation tables are used to provide for identification of members of messaging communities which allow for the implementation of virtual private networks connected to hub system (200) and other hubs.

DETDESC:

DETD(6)

As will be discussed more completely herein, communications system 10 operates to integrate and interconnect disparate sources and technologies of **communication** traffic and to translate **messages** between them. The **communications** system 10 maintains a universal database of all users of the communications system and their individual communications profiles including the various media in which the users can send and receive messages. For example, a single user may **control** and receive **communications** using an electronic mail facility, a voice mail facility, a facsimile facility and a video facility. All of these facilities. . . network hub within system 10 exemplified by network hubs 12, 14 and 16 in FIG. 1. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for maintaining individual user profiles in that large distributed network directories must be built and maintained. . . electronic mail message into a facsimile message and deliver the message to the designated facsimile facility. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the processing of multimedia messages and the alternate routing in that large distributed network. . . of the communications system, and delivered utilizing DTMF signaling and the native protocols of the user system. In addition, the **communications** protocols associated with **voice** **messaging** systems do not have the ability to request and specify special handling for multimedia messages.

DETDESC:

DETD(17)

A . . . manager 74, a data replicator 76 and an administrative event manager 78. In general, the control processors 66 operate to **control** the operation of the **network** hub and to manage and manipulate the information stored in the hub database 68. The hub database 68 is also. . . communications system including the internal interface 56 through an event processor 70. The event processor 70 provides the real time **control** of the **network** hub components. Event processor 70 responds to directory service requests, identification confirmation

requests, analog, digital and **network** connection requests, **message** delivery events and administration event queues. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the operations of the control processors, such as message routing, and the operations of the. . . requests, in that large distributed network directories must be built and maintained containing numerical address of the users of the **voice** **messaging** system.

DETDESC:

DETD(19)

FIG. . . . through database access procedures which may comprise, for example, SQL/stored procedures. Essentially, the various software modules may interface with the **control** processors 66 through **communications** mechanisms that may comprise, for example, TCP/IP sockets or **remote** procedure calls.

DETDESC:

DETD(20)

Event . . . a suitable hub control protocol. The hub control protocol may comprise a suitable interprocess communication mechanism that provides client-server, request-response **communications**. The hub **control** protocol may be based, for example, on **remote** procedure calls or TCP/IP sockets. The media translator 69 accesses messages in message store 58 through file server 59 to. . .

```
=> set pag scr;act t1/a;d 21 20 10 .finalreport
SET COMMAND COMPLETED
L1  (     34979)SEA FILE=USPAT PLU=ON  (19970201-19970522)/PD
L2              QUE  PLU=ON  AUDIO OR VOICE OR VOCAL
L3              QUE  PLU=ON  PAG##### OR MESSAG#### OR NOTIF########
L4              QUE  PLU=ON  COMMAND##### OR INSTRUCT#####
L5              QUE  PLU=ON  CONTROL####
L6              QUE  PLU=ON  COMMUNICAT##### OR LINK
L7              QUE  PLU=ON  NETWORK OR LAN
L8  (      5205)SEA FILE=USPAT PLU=ON  L2 (5A) L3
L9  (     79215)SEA FILE=USPAT PLU=ON  (L6 OR L7) (5A) (L4 OR L5)
L10 (      2041)SEA FILE=USPAT PLU=ON  L8 (L) L9
L11 (       796)SEA FILE=USPAT PLU=ON  L8 (5A) (L6 OR L7)
L12 (       471)SEA FILE=USPAT PLU=ON  L10 (L) L11
L13          24 SEA FILE=USPAT PLU=ON  L1 AND L12
US PAT NO:      5,606,577 [IMAGE AVAILABLE]              L13: 21 of 24
DATE ISSUED:    Feb. 25, 1997
TITLE:          Method and apparatus for a DMT transmitter having a data
                  for matter coupled directly to a constellation encoder
INVENTOR:       Gary W. Grube, Barrington, IL
                Timothy W. Markison, Austin, TX
                Matthew A. Pendleton, Cedar Park, TX
                Mathew A. Rybicki, Austin, TX
APPL-NO:        08/378,847
DATE FILED:     Jan. 26, 1995
US-CL-CURRENT: 375/295; 370/207; 375/260
US PAT NO:      5,608,725 [IMAGE AVAILABLE]              L13: 20 of 24
DATE ISSUED:    Mar. 4, 1997
TITLE:          Method and apparatus of a communications system having a
                  DMT infrastructure
INVENTOR:       Gary W. Grube, Barrington, IL
                Timothy W. Markison, Austin, TX
                Matthew A. Pendleton, Cedar Park, TX
                Mathew A. Rybicki, Austin, TX
APPL-NO:        08/378,850
DATE FILED:     Jan. 26, 1995
US-CL-CURRENT: 370/338; 348/7; 370/384, 431; 379/58
US PAT NO:      5,621,727 [IMAGE AVAILABLE]              L13: 10 of 24
DATE ISSUED:    Apr. 15, 1997
TITLE:          System and method for private addressing plans using
                  community addressing
INVENTOR:       Gregory M. Vaudreuil, Dallas, TX
APPL-NO:        08/499,198
DATE FILED:     Jul. 7, 1995
REL-US-DATA:    Continuation-in-part of Ser. No. 307,517, Sep. 16, 1994.
US-CL-CURRENT: 379/225, 231, 234
```

US PAT NO: 5,606,577 [IMAGE AVAILABLE] L15: 21 of 24
DATE ISSUED: Feb. 25, 1997
TITLE: Method and apparatus for a DMT transmitter having a data for matter coupled directly to a constellation encoder
US-CL-CURRENT: 375/295; 370/207; 375/260

ABSTRACT:
In a communication system that utilizes DMT technology to couple a primary site (102) to a plurality of secondary sites (104-108), the primary site (102) and each of the secondary sites (104-108) includes a DMT transmitter. Such a DMT transmitter includes a discrete multi-tone encoder that receives an ordered data stream and produces an encoded data stream based on bit loading information, and a data formatter operably coupled to the discrete multi-tone encoder, wherein the data formatter receives transmit data entries and produces the ordered data stream based on carrier channel allocation information.

DETDESC:

DETD(4)

Before . . . pass transmission paths. The inbound and outbound control channels established on the low pass transmission path are different than the **control** channels established in an RF **communication** system. The **control** channels of the RF **communication** system are used to convey communication system operational information to the subscribers of the system. For example, a request for. . .

DETDESC:

DETD(14)

In . . . wireless communication system, the primary site will allocate an RF communication resource in each secondary site supporting a two-way wireless **communication**. The **control** information identifying which RF **communication** resources have been allocated will be transmitted to the secondary sites via the outbound carrier channels functioning as the outbound. . .

DETDESC:

DETD(23)

Once . . . receive digital information of FIG. 9) affiliated with the system. For example, the communication unit 142 may transmit a digitized **audio** **message** (or an analog **audio** **message**) via an RF **communication** resource to an RF transceiver (base station) affiliated with a secondary site. The secondary site processes the digitized **audio** **message** into a DMT symbol and places it on a carrier channel designated as the inbound control channel.

DETDESC:

DETD(25)

To . . . . request directly to the controller 110 or indirectly to the controller 110 via memory 182. Upon receiving the request, the **controller** 110 determines whether the requesting **communication** unit is authorized to access the system and, if so, whether the requesting communication unit is authorized to access this. . . .

DETDESC:

DETD(26)

Having . . . Each target secondary site stores the carrier channel allocation information and data transmission begins. Data transmissions may begin when a **communication** unit transmits an **audio** **message** to an affiliated RF transceiver which, in turn, routes a digitized representation of the **audio** **message** to a secondary site. The secondary site converts the digitized representation into a DMT symbol, or a plurality of DMT. . .

DETDESC:

DETD(27)

FIG. . . . a plurality of subscriber interfaces 128. As shown, the subscriber interfaces 128 may be a base interface module 202, a **paging** interface module 206, an **audio**/visual interface 210, a data interface 214, or a plain old telephone system interface 218. In operation, the DMT receiver 122. . .

DETDESC:

DETD(28)

Upon . . . may indicate that one of the subscriber units affiliated with the secondary site may be required to participate in a **communication**. Alternately, the **control** information may indicate that a POTS call has been received, data is to be transferred, an audio/visual data sequence has. . .

DETDESC:

DETD(29)

As . . . site can access two-way wireless communications. The paging interface module 206 allows the secondary site to interface with an RF **paging** station 208. The **audio**/visual interfaces 210 allows the secondary site 108 to interface with a television set 212, a cable box, a VCR, a. . .

DETDESC:

DETD(31)

As an alternative example, assume that the control information indicates a two way RF communication and a POTS **communication**. In this example, the site **controller** 120 stores the control information indicating the types of calls and the carrier channel which is carrying the information. When. . .

DETDESC:

DETD(36)

At . . . infrastructure of the system. These are not the RF control channels used by the subscriber units in a two way **communication** system or the **control** channel used in a paging RF system.

DETDESC:

DETD(83)

FIG. . . . data transfer that the communication system can support. For example, the call may be for a video data transfer, an **audio** data transfer, a **page** to a pager or pagers, a two-way RF communication, a facsimile, a plain old telephone service (POTS) call, a cellular. . .

DETDESC:

DETD(102)

After . . . At step 552, the primary site transmits control information, via the outbound control channel, to the target sites, wherein the **control** information identifies the allocated RF **communication** resources.

US PAT NO: 5,608,725 [IMAGE AVAILABLE] L15: 20 of 24
DATE ISSUED: Mar. 4, 1997
TITLE: Method and apparatus of a communications system having a DMT infrastructure
US-CL-CURRENT: 370/338; 348/7; 370/384, 431; 379/58

ABSTRACT:
A communication system (100) includes a primary site (102) coupled to a plurality of secondary sites (104-108) using DMT technology. The primary site (102) includes a controller, a data multiplexing switch, a Discrete Multi-Tone transmitter, and a Discrete Multi-Tone receiver. Each of the secondary sites (104-108) includes a site controller, a subscriber interface, and a secondary Discrete Multi-Tone receiver.

DETDESC:

DETD(4)

Before . . . pass transmission paths. The inbound and outbound control channels established on the low pass transmission path are different than the **control** channels established in an RF **communication** system. The **control** channels of the RF **communication** system are used to convey communication system operational information to the subscribers of the system. For example, a request for. . .

DETDESC:

DETD(14)

In . . . wireless communication system, the primary site will allocate an RF communication resource in each secondary site supporting a two-way wireless **communication**. The **control** information identifying which RF **communication** resources have been allocated will be transmitted to the secondary sites via the outbound carrier channels functioning as the outbound. . .

DETDESC:

DETD(23)

Once . . . device that can receive digital information) affiliated with the system. For example, the communication unit 142 may transmit a digitized **audio** **message** (or an analog **audio** **message**) via an RF **communication** resource to an RF transceiver (base station) affiliated with a secondary site. The secondary site processes the digitized **audio** **message** into a DMT symbol and places it on a carrier channel designated as the inbound control channel.

DETDESC:

DETD(25)

To . . . request directly to the controller 110 or indirectly to the controller 110 via memory 182. Upon receiving the request, the **controller** 110 determines whether the requesting **communication** unit is authorized to access the system and, if so, whether the

requesting communication unit is authorized to access this. . .

DETDESC:

DETD(26)

Having . . . Each target secondary site stores the carrier channel allocation information and data transmission begins. Data transmissions may begin when a **communication** unit transmits an **audio** **message** to an affiliated RF transceiver which, in turn, routes a digitized representation of the **audio** **message** to a secondary site. The secondary site converts the digitized representation into a DMT symbol, or a plurality of DMT. . .

DETDESC:

DETD(27)

FIG. . . . a plurality of subscriber interfaces 128. As shown, the subscriber interfaces 128 may be a base interface module 202, a **paging** interface module 206, an **audio**/visual interface 210, a data interface 214, or a plain old telephone system interface 218. In operation, the DMT receiver 122. . .

DETDESC:

DETD(28)

Upon . . . may indicate that one of the subscriber units affiliated with the secondary site may be required to participate in a **communication**. Alternately, the **control** information may indicate that a POTS call has been received, data is to be transferred, an audio/visual data sequence has. . .

DETDESC:

DETD(29)

As . . . site can access two-way wireless communications. The paging interface module 206 allows the secondary site to interface with an RF **paging** station 208. The **audio**/visual interfaces 210 allows the secondary site 108 to interface with a television set 212, a cable box, a VCR, a. . .

DETDESC:

DETD(31)

As an alternative example, assume that the control information indicates a two way RF communication and a POTS **communication**. In this example, the site **controller** 120 stores the control information indicating the types of calls and the carrier channel which is carrying the information. When. . .

DETDESC:

DETD(36)

At . . . infrastructure of the system. These are not the RF control channels used by the subscriber units in a two way **communication** system or the **control** channel used in a paging RF system.

DETDESC:

DETD(83)

FIG. . . . data transfer that the communication system can support. For example, the call may be for a video data transfer, an **audio** data transfer, a **page** to a pager or pagers, a two-way RF communication, a facsimile, a plain old telephone service (POTS) call, a cellular. . .

DETDESC:

DETD(102)

After . . . At step 552, the primary site transmits control information, via the outbound control channel, to the target sites, wherein the **control** information identifies the allocated RF **communication** resources.

US PAT NO: 5,621,727 [IMAGE AVAILABLE] L15: 10 of 24
DATE ISSUED: Apr. 15, 1997
TITLE: System and method for private addressing plans using community addressing
US-CL-CURRENT: 379/225, 231, 234

ABSTRACT:
A network hub system (200) is connected to a communications cloud (18) as well as messaging systems (202), (204), (206) and (208). A public access port (212) interacts with a public virtual messaging system (202a). A private access port (214) interacts with a private virtual messaging system (202b). Address translation tables are used to provide for identification of members of messaging communities which allow for the implementation of virtual private networks connected to hub system (200) and other hubs.

DETDESC:

DETD(3)

FIG. . . . to a wide variety of message destinations. For example, hub system 12 is shown coupled to a telephone 22, a **messaging** system 24, a conventional **voice** mail system 26 which is coupled to a large number of telephone terminals represented by telephone 38, a facsimile transmission. . .

DETDESC:

DETD(6)

As . . . profiles including the various media in which the users can send and receive messages. For example, a single user may **control** and receive **communications** using an electronic mail facility, a voice mail facility, a facsimile facility and a video facility. All of these facilities. . . network hub within system 10 exemplified by network hubs 12, 14 and 16 in FIG. 1. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for maintaining individual user profiles in that large distributed network directories must be built and maintained. . . electronic mail message into a facsimile message and deliver the message to the designated facsimile facility. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the processing of multimedia messages and the alternate routing in that large distributed network. . . of the communications system, and delivered utilizing DTMF signaling and the native protocols of the user system. In addition, the **communications** protocols associated with **voice** **messaging** systems do not have the ability to request and specify special handling for multimedia messages.

DETDESC:

DETD(7)

For . . . sources of and destinations for data traffic coupled to and serviced by the communications system 10 are referred to as "**messaging** systems" whether they comprise **voice** mail systems,

electronic mail systems, facsimile transmission facilities, video transmission facilities or other data transmission or receipt facilities. As such, . . . referred to herein as a "message" regardless of its composition. For example, a message received, processed and delivered by the **communications** system 10 may comprise a **voice** **message**, an electronic mail **message**, a facsimile or video transmission or any combination of medium to form a compound message. As used herein, the "media" of a message refers to the manner in which the message is received or delivered. For example, various **message** media may comprise **voice**, electronic mail, facsimile or other graphic images, or video. Further, the "protocol" of a message refers to the manner in. . .

DETDESC:

DETD(8)

The . . . system 10. Further, public domain protocols such as X.400 messaging, SS7 signalling and both digital and analog versions of the **audio** **message** interchange specification (AMIS) are also supported by communications system 10. For example, the X.400 protocol includes support for virtually all. . . to support whatever features are implemented by messaging systems connected to the communications system 10. Additionally, for large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the providing of multi-protocol translation capabilities in that messages are delivered utilizing DTMF signaling and numerical addresses. In addition, the **communications** protocols associated with **voice** **messaging** systems do not have the ability to request or specify a translation to a disparate protocol.

DETDESC:

DETD(9)

The . . . use any number of public or proprietary directory information protocols understood by the communications system 10. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for providing directory addressing services in that large distributed network directories must be built and maintained. . .

DETDESC:

DETD(11)

The . . . changing body of information as to the status of all messages within the communications system 10. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for access and update of user profile information and message tracking in that large distributed network. . .

DETDESC:

DETD(12)

As . . . network hubs and be instantaneously available to any

messaging system connected to the communications system 10. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for providing bulletin boards or other bodies of shared information services in that large distributed network. . .

DETDESC:

DETD(14)

FIG. . . . example, an analog connection processor 52 communicates with external messaging systems that use analog communication protocols such as an analog **communication** protocol utilized by a **voice** **messaging** system that uses DTMF signaling. Similarly, a digital connection processor 54 communicates with external messaging systems that use digital communication. . . translator 69 performs media and other forms of translation on messages stored in message store 58. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for providing media and other translation services, in that translation parametrics must be accessed from distributed network directories utilizing numerical addressing methods and that **communications** protocols associated with **voice** **messaging** systems are not able to request or specify media translation services.

DETDESC:

DETD(16)

A . . . particular network hub and operates to monitor and manage message traffic within the particular network hub. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for tracking of user messages and information, in that messages must be accessed and tracked by the numerical addresses of the users of the **voice** **messaging** system.

DETDESC:

DETD(17)

A . . . manager 74, a data replicator 76 and an administrative event manager 78. In general, the control processors 66 operate to **control** the operation of the **network** hub and to manage and manipulate the information stored in the hub database 68. The hub database 68 is also. . . communications system including the internal interface 56 through an event processor 70. The event processor 70 provides the real time **control** of the **network** hub components. Event processor 70 responds to directory service requests, identification confirmation requests, analog, digital and network connection requests, message delivery events and administration event queues. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the operations of the control processors, such as message routing, and the operations of the. . . requests, in that large distributed network directories must be built and maintained containing numerical address of the users of the **voice** **messaging** system.

DETDESC:

DETD(19)

FIG. . . . through database access procedures which may comprise, for example, SQL/stored procedures. Essentially, the various software modules may interface with the **control** processors 66 through **communications** mechanisms that may comprise, for example, TCP/IP sockets or remote procedure calls.

DETDESC:

DETD(20)

Event . . . a suitable hub control protocol. The hub control protocol may comprise a suitable interprocess communication mechanism that provides client-server, request-response **communications**. The hub **control** protocol may be based, for example, on remote procedure calls or TCP/IP sockets. The media translator 69 accesses messages in. . .

DETDESC:

DETD(21)

Management . . . center 37 using messaging protocols or directory protocols appropriate to the destinations connected to these facilities. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the network hub operations, in that large distributed network directories must be built and. . .

DETDESC:

DETD(23)

Each . . . the storage of accounting information, directory service requests, identification confirmations, routing information and queue services information. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the network hub database in that large distributed network directories must be built and. . .

DETDESC:

DETD(25)

The . . . performs the translations of messages from one media to another such as, for example, the translation of an electronic mail **message** into a **voice** **message** using a text to speech system. The operation of media translator 69 will be discussed more fully with reference to. . .

DETDESC:

DETD(27)

FIG. . . . forms of messages from analog connected messaging systems

using analog networking protocols such as analog AMIS. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication to the analog connection processor's functionality, in that the communications system must support standard telephone. . . addressing and access/deliver information to the requesting system utilizing DTMF signaling, and further support the native protocols of the attached **voice** **messaging** system. The analog connection processor 52 runs on a hardware platform that may comprise, for example, a 486-ISA bus personal. . .

DETDESC:

DETD(28)

Referring . . . control module 84 allows the analog connection processor 52 to communicate with the management processor 64 using a management protocol. **Control** module 84 also **communicates** with event processor 70 as described previously using the hub control protocol.

DETDESC:

DETD(35)

Digital connection processor 54 further comprises a **control** module 104 that facilitates **communication** using hub **control** protocol with the event processor 70. The **control** module 104 also **communicates** with the management processor 64 using the management protocol.

DETDESC:

DETD(39)

Both . . . processor 52 and the digital connection processor 54 are responsible for accepting and validating incoming messages. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication to the internal message format in that the communications system must support standard telephone interfaces and support messages that are typically large, spanning several minutes of digitized analog **audio** signals. The delivery of these **messages** involve a translation or conversion of the message. For example, the message may need to be translated into a different. . .

DETDESC:

DETD(42)

FIG. 7 is a block diagram which illustrates the functional modules used by the network processor 60. The **network** processor 60 contains a **control** module 120 which allows the **network** processor module to communicate with the event processor 70, the management processor 60, and other network processors 122 shown in. . . message store 58, file server 59, and hub database 68. The network processor 60 communicates with other resources in the **network** hub using three data paths. **Control** and query information exchanges between the network processor

.60 and the event processor 70 are exchanged using the hub control. . .

DETDESC:

DETD(43)

The . . . states described with reference to FIG. 6 and the operation of the analog connection processor 52. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the network processor operation in that large distributed network directories must be built and maintained. . .

DETDESC:

DETD(45)

FIG. . . . messages accessed by the media translator 69 from the message store 58 using file server 59. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the event processor operation in that large distributed network directories must be built and maintained. . .

DETDESC:

DETD(48)

As . . . replicator 76, and the administrative event manager 78 each control a collection of tasks responsible for the actions of the **network** hub. Overall **control** of the **network** hub is achieved through **control** of the hub database 68 and specifically the message queues and administrative event queues contained within the hub database 68.. . .

DETDESC:

DETD(52)

The . . . the submitted messages and how long it has been since the message was received for delivery. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the message router operation, in that large distributed network directories for the hub database. . .

DETDESC:

DETD(54)

The . . . If network connections are required, a record is similarly formatted and placed in connection queue 141. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the connection manager operation in that the message records within the inbound and outbound message. . .

DETDESC:

DETD(55)

The connection manager 74 **controls** the connections between each **network** hub, the network center 37, and each messaging system. The connection manager 74 creates connection queue records for each message. . .

DETDESC:

DETD(60)

The . . . to any of these locations, an entry is made in the outbound administrative event queue 143. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the administrative event manager operation in that the administrative event records within the administrative event. . .

DETDESC:

DETD(66)

The . . . and delete entries in the queues discussed previously as necessary to repair errors and expedite messages. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the management processor operation in that the accessing, updating, deleting, and reordering of the inbound. . .

DETDESC:

DETD(68)

As . . . as it makes connections to enable the passing of messages out of the particular network hub. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the event processor operation in that inputting message records into the inbound message queue and. . .

DETDESC:

DETD(70)

FIG. . . . the management protocol with the analog connection processor 52, the digital connection processor 54, the event processor 70 and the **network** processor 60. The **control** module 150 also interacts with the hub database 68 and, specifically the alarms database 131, using database access procedures. The. . .

DETDESC:

DETD(73)

The . . . is able to communicate with messaging systems using various messaging protocols used by current messaging systems. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the communications system of the present invention, and especially the media

translator in that the user profile records must be accessed to perform media translation selection because the **communications** protocols associated with **voice** **messaging** systems are not able to indicate the necessity or to specify the nature of media translation services required.

DETDESC:

DETD(75)

As . . . addition, media translation can occur automatically responsive to the needs of a destination messaging system. For example, if a destination **messaging** system comprises a simple **voice** **message** system with no data, facsimile or capability other than **voice**, all **messages** to such **voice** **message** system can be translated to **voice** **messages** regardless of the media in which the message was sent. In this particular example, the communications system of the present invention would translate all non-**voice** **messages** to a textual format and utilize a text to speech converter to create the final, deliverable **voice** **message**.

DETDESC:

DETD(81)

For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the network center 37. First, the accessing of records in the master database files must. . .

DETDESC:

DETD(87)

As . . . perform per-feature routing and filtering, such as sending urgent messages to a call message delivery system rather than a conventional **voice** mail facility. **Messages** can also be routed and filtered based on the subject matter of the message using the message subject matter field. . .

DETDESC:

DETD(96)

For example, a single message received by communications system 10 may comprise both a **voice** **message** and a facsimile transmission. The **communications** system 10 is operable to route the **voice** portion to a **voice** **messaging** system and the facsimile to a facsimile messaging system both of which are associated with the message recipient. The communications. . . recipient if the message recipient does not have the appropriate facilities. For example, if a compound message is received by **communications** system 10 comprised of a **voice** **message** and an electronic mail transmission but the **message** recipient only has a **voice** **messaging** facility and a facsimile **messaging** facility, **communications** system 10 will transmit the **voice** portion of the compound **message** to the **message** recipient's **voice** **messaging** facility and translate the electronic mail message to a facsimile image for delivery to the message recipient's

facsimile messaging facility. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the processing of compound messages in that the accessing of the user profile records to. . .

DETDESC:

DETD(101)

The . . . computer that does not have any sort of sound capability), the communications system of the present invention can route the **voice** portion of the **message** to the **voice** mailbox of the recipient and the text portion of the message to the electronic mail facility of the recipient or, alternatively, the **voice** portion of the **message** could be translated to text using the media translation facility of the communications system of the present invention and delivered with the E-mail message. On the other hand, if the recipient only has a **voice** **messaging** system, the text portion of the E-mail could be translated into **voice** and delivered with the **voice** **message**.

DETDESC:

DETD(103)

The . . . the present invention, this feature can be supported without being supported by the recipient messaging system. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the providing of messaging features, such as privacy, urgency, delivery confirmation, etc. In the context of interaction with **voice** **messaging** systems, these features must be created, maintained, and accessed in the user profile records using the short, fixed length numerical. . .

DETDESC:

DETD(106)

The . . . the bulk mailing list agent 171 is essential to the efficient distribution of these mass messages. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the providing of mailing list distribution, such as group codes and bulk mailing lists in. . .

DETDESC:

DETD(111)

For . . . that any electronic mail message of a personal nature from a particular sender is to be immediately translated into a **voice** **message** and placed in a mailbox and, further, that a pager call is to be instituted to the user to alert him that the **message** is present in the **voice** mailbox.

DETDESC:

DETD(112)

For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the providing of message routing services in that the message subject matter field which is. . .

DETDESC:

DETD(119)

For **voice** **messages** or **messages** of other media which must be converted to voice to be delivered, communications system 10 will repeatedly attempt to call. . . each network hub to facilitate delivery of the message. Secure messages are received by using a password to access the **message**. Interactive **voice** response system 169 asks the answering party to enter the appropriate password and will only deliver the message if the. . . enter a time when the intended recipient of the message would like redelivery of the message. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the providing of interactive voice response services. For example, the providing of this service must. . .

DETDESC:

DETD(125)

While . . . present invention uses master database 151 to provide an immediate advantage over a peer-to-peer networking system. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the providing of secure messaging services, in that the public key which is used. . .

DETDESC:

DETD(129)

For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the providing of identification confirmation services because this service is usually a spoken name. . .

DETDESC:

DETD(131)

Many . . . then decide to send the message anyway or pursue other options to contact the intended recipient. For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces a further complication for the providing of extended absence services because this service is a spoken greeting and. . .

DETDESC:

DETD(139)

As . . . accepts and reviews an advertising message. In addition, communications system 10 can interact with users after receipt of an advertising **message** through interactive **voice** response system

169, customer computer interface system 167, or directly through the external interface 62 using a real time communication. . .

DETDESC:

DETD(143)

For large scale integrated **network** functionality, interfacing with **voice** **messaging** systems introduces further complications for the providing of directory and addressing operations services in that the address which is used. . .

DETDESC:

DETD(147)

Many existing private **voice** **messaging** systems allow access to **voice** mailboxes within the system using a variety of entry methods. Parties using the existing **voice** **messaging** system can use short form addresses or private addressing methodologies to access the voice mailboxes of other persons using the same **voice** **messaging** system. Routing and delivering **messages** from the general public via a connection to a network such as the communications system 10 of the present invention. . . international or ten digit telephone number. However, the private numbering plans and private addressing methodologies are problematic if independent private **voice** **messaging** systems are to be networked using shared facilities because different parties on different private messaging systems could conceivably have the. . .

DETDESC:

DETD(156)

Referring to FIG. 17a, the hub 200 uses the ANI and DNIS call line identification information to identify the source **voice** **messaging** system i.d. and the community. In the example shown in FIG. 17a, the source **voice** **messaging** system i.d. is PrDalTx and the community identifier is 101. The hub 200 was able to obtain this information by. . .

DETDESC:

DETD(157)

Referring . . . to FIG. 17b, the hub 200 uses the sender mailbox number, namely Jane's mailbox number of 4437, and the source **voice** **message** system i.d. found previously, and determines the sender user i.d. Here, the hub 200 accesses the translation table shown in. . .

US PAT NO: 5,140,626 [IMAGE AVAILABLE] L19: 62 of 100
DATE ISSUED: Aug. 18, 1992
TITLE: Paging system for establishing telephone connection between calling party and paged party
INVENTOR: Andrew D. Ory, 30 Appleton St., Somerville, MA 02144
Mark L. Kettering, Bedford, MA
APPL-NO: 07/541,843
DATE FILED: Jun. 21, 1990
US-CL-CURRENT: 379/57, 56, ~~67, 201~~

US PAT NO: 5,133,081 [IMAGE AVAILABLE] L19: 63 of 100
DATE ISSUED: Jul. 21, 1992
TITLE: Remotely controllable message broadcast system including central programming station, remote message transmitters and repeaters
INVENTOR: Scott T. Mayo, 5504 Knollwood Dr., Raleigh, NC 27609
APPL-NO: 07/431,537
DATE FILED: Nov. 3, 1989
US-CL-CURRENT: ~~455/18; 340/905; 369/7; 381/2; 455/66~~

US PAT NO: 5,128,981 [IMAGE AVAILABLE] L19: 66 of 100
DATE ISSUED: Jul. 7, 1992
TITLE: Radio communication system and a portable wireless terminal
INVENTOR: Nobuo Tsukamoto, Tachikawa, Japan
Hiroshi Kuwahara, Kodaira, Japan
Yuji Sakamoto, Kokubunji, Japan
Kumiko Takikawa, Tama, Japan
APPL-NO: 07/526,246
DATE FILED: May 21, 1990
US-CL-CURRENT: 379/~~58; 59; 60; 61~~, ~~63~~

US PAT NO: 5,117,460 [IMAGE AVAILABLE] L19: 67 of 100
DATE ISSUED: May 26, 1992
TITLE: Voice controlled pager and programming techniques therefor
INVENTOR: Thomas G. Berry, Schaumburg, IL
Paul F. Smith, No. Richland Hills, TX
Kamyar Rohani, No. Richland Hills, TX
Winfield J. Brown, Jr., Lantana, FL
Philip P. Macnak, West Palm Beach, FL
APPL-NO: 07/646,484
DATE FILED: Jan. 25, 1991
REL-US-DATA: Continuation of Ser. No. 213,656, Jun. 30, 1988, abandoned.
US-CL-CURRENT: ~~381/41~~; 340/311.1, 825.44; ~~367/198~~